



INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior
National Park Service

All or some of the information you provide may become available to the public.

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Reporting Year: 2006	Park: Shenandoah NP	Select the type of permit this report addresses: Scientific Study	
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Project Title (maximum 300 characters): Air Pollution Monitoring: TEOM - PM2.5 FRM Comparison			
Park-assigned Study or Activity #: SHEN-00329	Park-assigned Permit #: SHEN-2006-SCI-0013	Permit Start Date: Oct 01, 2006	Permit Expiration Date: Jul 31, 2007
Scientific Study Starting Date: Oct 01, 2006		Estimated Scientific Study Ending Date: Jul 31, 2007	
For either a Scientific Study or a Science Education Activity, the status is: Continuing		For a Scientific Study that is completed, please check each of the following that applies: <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
Activity Type: Research			
Subject/Discipline: Air Pollution Effects			

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

In 2004, the Office of Air Quality Monitoring (AQM) assisted the National Park Service in installing a TEOM Continuous PM2.5 (fine particulate) monitor at the Big Meadows air monitoring site. The TEOM was furnished by VISTAS by funding arranged through EPA III. The National Park Service reports the uncorrected particulate data (no seasonal correlations). VA DEQ assists the Park Service by seeing that the particulate data is entered into the EPA Air Quality System (data bank) and that it is reported to AirNow. VA DEQ also performs independent audits on the TEOM particulate monitor, and assists troubleshooting instrument malfunctions. EPA has requested the VA DEQ operate a FRM PM2.5 monitor at the site for a period of one year as a collocated particulate sampler.

The collocated data will be used to establish seasonal correction factors that will make the TEOM data "FRM-like" and comparable to other TEOM monitor across Virginia currently using seasonal correction factors. Comparisons will also be able to be made with continuous particulate monitors in the Mid-Atlantic region.

To accomplish this task, there will need to be cooperation between AQM, the DEQ Harrisonburg office, and the National Park Service. The proposal is:

- 1) AQM personnel will install an R&P PM2.5 Model 2025 on the roof of the ETKO sampling shelter at Big Meadows or on the ground along side the shelter if no room is available on the roof. On the roof, the monitor will be secured by clamping it to the roof railing. If on the ground, the monitor will be secured to a wooden pallet (provided by VA DEQ).
- 2) The PM2.5 monitor will run on an everyday schedule for four periods of approximately thirty days each during the next year.
- 3) An employee from the DEQ Harrisonburg Office will visit the site once per week, usually on a Tuesday or Wednesday. Exposed filters will be retrieved at that time and seven or eight sample filters will be loaded into the monitor. An appropriate amount of field blanks will be run on the sampler to determine if there is any contamination to the filter due to handling, transport, or instrumentation malfunction. Time and date of retrieval of samples will be documented and forwarded to AQM.
- 4) National Park Service personnel will not operate the sampler, but will routinely check on it and inform Harrisonburg DEQ of any problems. Sampler calibration , audits, maintenance and repair will be the responsibility of DEQ personnel.
- 5) The AQM will arrange with the Division of Consolidated Laboratory Services to secure additional clean filters for the Harrisonburg DEQ office to complete this project.
- 6) Arrangement for entry into the Big Meadows air sampling site by Harrisonburg DEQ personnel will need to be arranged with Park personnel.
- 7) It is requested that installation and operation begin as soon as details can be worked out.

Tom Jennings

Air Quality Manager

Office of Air Quality Monitoring

VA DEQ

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Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

The FRM PM2.5 sampler was installed at Big Meadows on September 26, 2006, by personnel from the Harrisonburg Regional Office of the VA DEQ and the VA DEQ Office of Air Quality Monitoring. Twenty-four hour sampling began the following day with

operation being done by the Harrisonburg Regional Office. Everyday samples were collected through the end of October. The data from the collocated sampler were paired with 24-hour averages taken from the existing TEOM Continuous particulate sampler. Of thirty-five possible pairs of data, twenty-nine were deemed acceptable for statistical comparisons. Six samples from the FRM were voided due to instrument malfunction or samples below the minimum detectable limit. Results of the sampling showed low fine particulate values by both samplers. TEOM Continuous sampler recorded fine particulate values higher than the collocated FRM sampler. A PM2.5 seasonal correction value will be determined for this air quality monitoring site. This air quality sampling constitutes only one fourth of the study. Winter (January), Spring (April) and Summer (July) sampling will produce seasonal data comparisons for one year and complete the study.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis? No	
Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount): \$0	Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount): \$2000
List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year: 	

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.